

The origins of Typhoon Dot can be traced back to a weak surface circulation located near Kwajalein (WMO 91366) on the 5th of August. Surface winds associated with this circulation were 5 to 10 kt (3 to 5 m/sec) and the minimum surface pressure was 1008 mb. Over the next two days, as the circulation drifted northwestward, it remained fairly weak with loosely organized convection and light winds. On 8 August, a reconnaissance aircraft mission into the area showed that the circulation had maximum sustained winds of 20 kt (10 m/sec) but that the surface circulation was still very broad with relatively unorganized convection. However, satellite imagery and 200 mb data indicated that an upper-level anticyclone was present in the area, although not vertically aligned with the surface center. A Tropical Cyclone Formation Alert (TCFA) was issued at 080500Z based upon the persistence of the system and the presence of upper-level conditions that could lead to intensification of the disturbance. The initial warning on Tropical Depression 13 was issued at 090000Z when satellite imagery indicated that the cloud pattern associated with the developing depression was becoming more organized along with increased convective activity.

A reconnaissance aircraft mission at 090118Z observed surface winds of 35 kt (18 m/sec) and an extrapolated minimum sea

level pressure of 1003 mb. Based on these data, Tropical Depression 13 was upgraded to Tropical Storm Dot at 090600Z. During this period, the subtropical ridge was well established to the north of the system; thus Dot was forecast to track westward and to continue to intensify. Dot lived up to these expectations, moving westward and reaching typhoon strength on 11 August. However, after reaching a maximum intensity of 80 kt (41 m/sec), Dot began to weaken as upper-level outflow channels became restricted due to interaction with Typhoon Cecil (12) located to the northwest. This interaction is easily seen on satellite imagery (Figure 3-13-1 shows the early stages of this interaction); at this time, Cecil was located northeast of Taiwan with maximum winds of 90 kt (46 m/sec) and Tropical Storm Dot, with maximum sustained winds of 50 kt (26 m/sec), was rapidly intensifying and would achieve maximum sustained winds of 80 kt (41 m/sec) on the following day. Although there was some interference in the upper-level outflow between the two cyclones, Dot's outflow channels to the northeast and southwest were well established. Figure 3-13-2 shows the relationship between the two cyclones two and one-half days later. Although the satellite pass was not optimally located, features of interest are readily observable, i.e., Dot's outflow channels to the north were completely cut off by the strong northeasterly winds associated with Cecil's outflow. The 200 mb analysis for

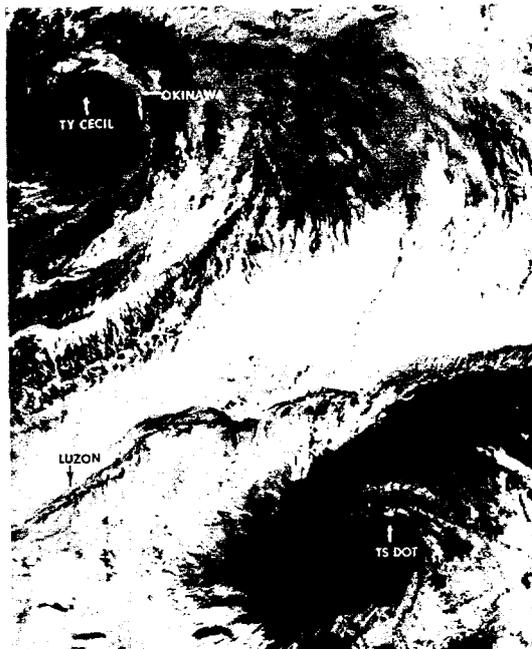
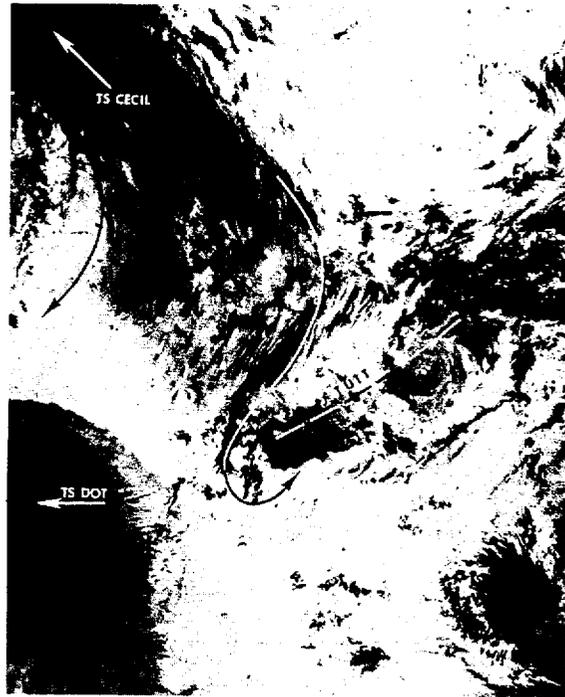


Figure 3-13-1. Satellite imagery shows Typhoon Cecil at the upper left and Tropical Storm Dot at the lower right. 100529Z August (NOAA 7 infrared imagery).

Figure 3-13-2. Satellite imagery shows Tropical Storm Cecil at the upper left and Tropical Storm Dot at the lower left. 121750Z August (NOAA 7 infrared imagery).



this period (Figure 3-13-3) shows that flow was unidirectional over Dot, with no indication of an anticyclone at that level.

As the distance between Cecil and Dot increased over the next few days, Dot regained intensity, reaching maximum sustained winds of 60 kt (31 m/sec) on the 13th. Figure 3-13-4 shows the relationship between Dot's intensity and the separation between the two cyclones. The data indicate a correlation between separation and Dot's intensity once the separation distance fell below 1000 nm (1852 km).

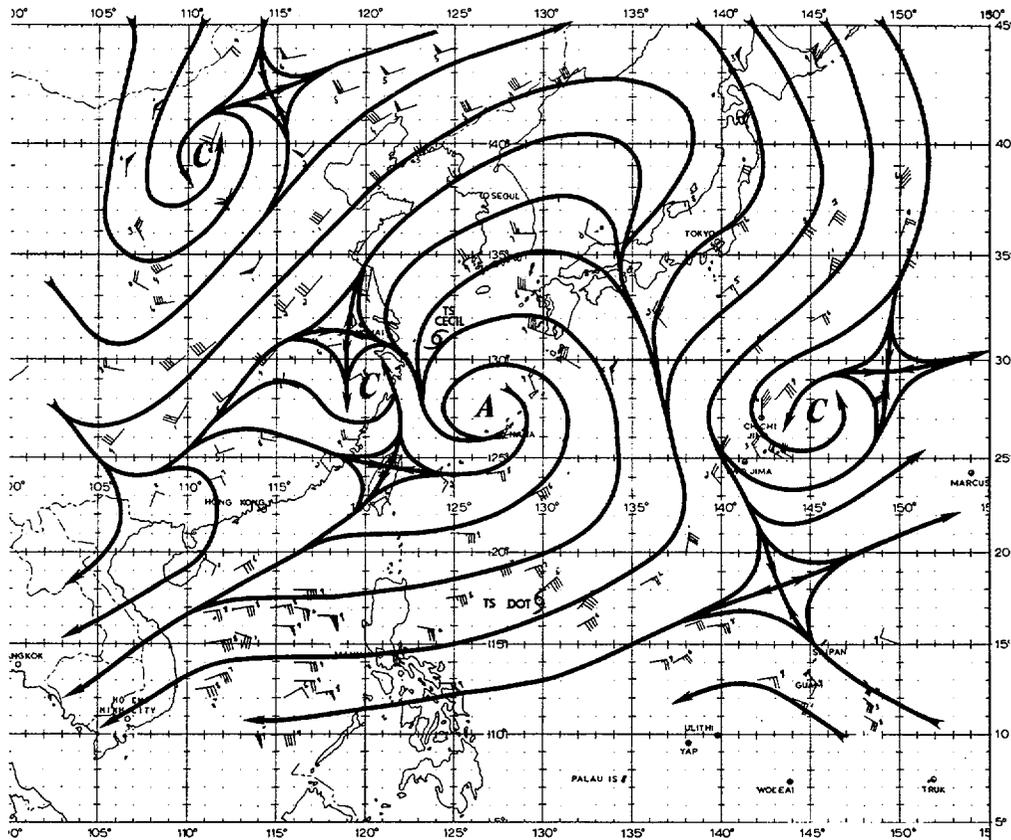


Figure 3-13-3. 121200Z 200 mb analysis with surface position of Tropical Storms Cecil and Dot superimposed.

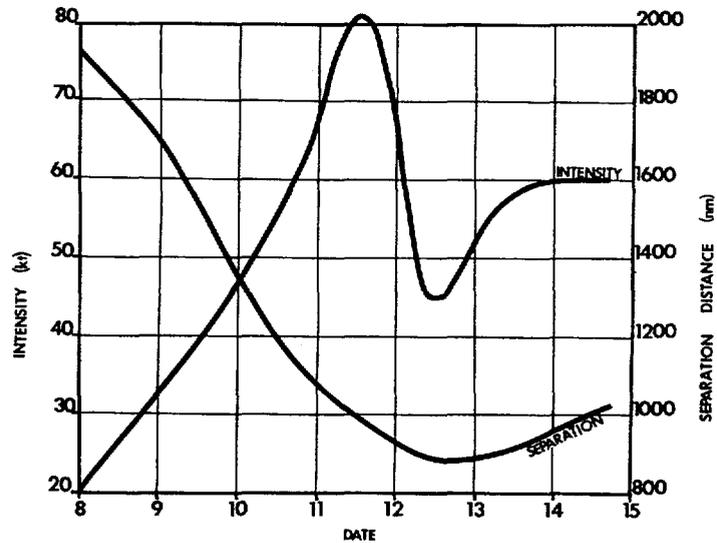


Figure 3-13-4. Variation in intensity as a function of time and separation between Dot and Cecil.

As Dot continued westward along the southern periphery of the subtropical ridge, several forecasts were issued indicating Dot would follow Cecil and turn toward the north prior to reaching Taiwan. However, the subtropical ridge was reestablished in the region to the north of Taiwan after Cecil's passage; subsiding air between the two tropical cyclones probably contributed to the ridging in this area, thereby causing Dot to continue its movement westward toward Taiwan. Although Dot's passage over

Taiwan was rapid, the rugged topography of the island had a devastating effect on Dot's low-level circulation. Figure 3-13-5 shows Dot as a well-organized tropical storm with maximum sustained winds of 60 kt (31 m/sec) prior to landfall. Figure 3-13-6 shows Dot 12 hours later in the Formosa Strait, barely distinguishable as a tropical storm. Dot never recovered from the effects of this crossing and dissipated less than a day later over the mountainous regions of eastern China.

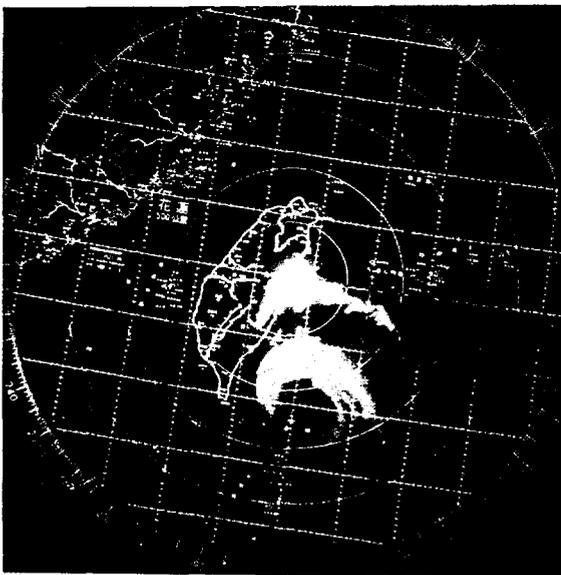


Figure 3-13-5. Tropical Storm Dot was approaching Taiwan from the southeast, as seen by radar from Hua Lien (WMO 46699) at 141400Z August (Photograph courtesy of the Central Weather Bureau, Taipei, Taiwan).

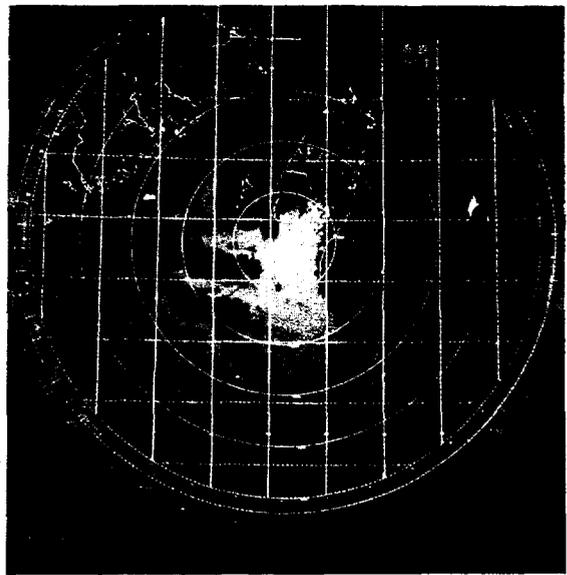


Figure 3-13-6. Tropical Storm Dot, located in the Formosa Strait after crossing southern Taiwan, as seen by radar from Kao-hsiung (WMO 46744) at 150200Z August (Photograph courtesy of the Central Weather Bureau, Taipei, Taiwan).